Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

with the 12-inch telescope. It was a small object, nearly round, about 3′ in diameter, with a well marked central condensation, hardly sharp enuf to be called a nucleus. It was low in the eastern sky just before dawn, and its motion was found to be to the south and east, towards the Sun. Measures were not difficult on this night nor on September 20th, for the observing conditions were good. On the two following nights, September 21st and 22d, wind and poor seeing, and moonlight made the comet exceedingly faint. On September 21st no star was available for direct measures, and the approach of dawn permitted only four measures in each co-ordinate, by transits, from a star nearly 2^m distant. This observation should be given small weight in the definitive orbit discussion. Strong moonlight and the comet's rapid approach to the Sun prevented further measures. It was looked for in the western sky after sunset in October, but without success.

R. G. Aitken.

November 8, 1915.

A Brilliant Aurora.

In the early morning hours of June 17, 1915 (civil time), a beautiful aurora was seen from Mount Hamilton. It was first noticed shortly after midnight and became most brilliant at about 2:30 (P. S. T.). The illumination extended from 15° to 30° west of north to 80° or 90° east of north. The streamers reached half way to the zenith,—up into the Milky Way about *Cassiopeia*. Few of the streamers were as long as 60°, and the forms were changing constantly. There was a distinct crimson color in the east,—just over Copernicus Peak as seen from near the 12-inch dome.

An aurora in California,—at least in the region around San Francisco Bay,—is a very rare phenomenon, and I have no recollection of ever having seen one in this region before.

S. D. Townley.

Observed Rotations of Planetary Nebulæ.

An observation of planetary nebula NGC 7009, R. A. 20^h 58^m, Decl. — 11° 48′, secured with the three-prism Mills spectrograph on the evening of November 14, 1915, showed us, the following day, that the bright lines composing the nebular spectrum are inclined to the zero direction, as indicated by the comparison spectra of hydrogen and helium. We had made the exposure, using a slit a little longer than the east and west diameter of the nebula, for the purpose of testing the question of nebular rotation, and the inclination of lines, as described above, was the evidence which we were hoping to secure.

The general outline of the image of this nebula is elliptic with the major axis in position angle 79° and the minor axis in position angle 169°.

The first spectrogram had been secured with the telescope and spectrograph east of the pier of the telescope and the slit in position angle 90°. To make sure that the inclination of the lines was not an instrumental effect, the second spectrogram was obtained with the telescope and spectrograph west of the pier, which reverses the instrumental conditions. The slit was in position angle 79°; that is coincident with the longer axis of the nebular ellipse. The resulting spectrogram fully confirmed the results of the first observation. The third spectrogram, with telescope east of the pier and the slit in position angle 79°, was in accord with the earlier results. A fourth spectrogram, with slit in position angle 169°, that is, coincident with the minor axis of the ellipse, gave no evidence of inclination of the lines.

The ends of the lines corresponding to the west edge of the nebula are displaced to the violet with reference to the ends corresponding to the eastern edge of the nebula. The interpretation is, that the rotation of the nebula is carrying the western edge toward us and the eastern edge away from us. The maximum rotational speed appears to be at approximately 9 seconds of arc from the center of the nebula and is in amount, 6 kilometers per second. The extreme outer ends of the spectrum lines do not maintain their inclination at the full rate, but turn back slightly. This we interpret to mean that the law of rotation is such that the outer strata lag behind.

The measure of the rotational velocity should enable us, at a later date, to draw interesting conclusions as to the mass of the nebula, which seems to be many-fold that of our solar system, as to the geometric form of the nebula, whether it is an ellipse or an ellipsoid, etc.

Positive evidence of rotational effects in two other planetary nebulæ have been secured to date, as well as suspected evidence in other cases, but further announcement is delayed pending full confirmation.

W. W. CAMPBELL,
J. H. MOORE.